f r q

(i)

$g(x) = 5\pi$

$15 \arcsin x = 5\pi$

$\arcsin x = \frac{5\pi}{15}$

$x = \sin\left(\frac{\pi}{3}\right)$

$x = \frac{\sqrt{3}}{2}$

(ii)

$h(x) = 1$

$\log_{10}(1-x) - \log_{10} 4 = 1$

$\log_{10}\left(\frac{1-x}{4}\right) = 1$

$\left(\frac{1-x}{4}\right) = 10$

$1 - x = 40$

$x = -39$

Part B

Select a point value to view scoring criteria, solutions, and/or examples to score the response.

✓

0	1	2

The student response includes both of these criteria.

- Expression for $j(x)$

- Expression for $k(x)$

Model Solution

(i) $j(x) = \log_2(x+4) - 11\log_2(x-2) + \log_2(x^3)$

$j(x) = \log_2(x+4) - \log_2\left((x-2)^{11}\right) + \log_2(x^3)$

$$j(x) = \log_2\left(\frac{(x+4)}{(x-2)^{11}}\right) + \log_2(x^3)$$